

IN THE DRAWINGS

Enclosed herewith are REPLACEMENT SHEETS in which the blocks in Fig. 1 are labeled, and the waveform diagrams of Fig. 2 are labeled.

REMARKS

The specification has been amended on page 1 to include a reference to International Patent Application No. PCT/IB03/50020. Applicant submits that a Petition under 37 C.F.R. 1.78(a) and the surcharge under 37 C.F.R. 1.17(t) are not required as the "information concerning the benefit claim was recognized by the Office as shown by its inclusion on the first filing receipt".

The specification has further been amended on page 5 to more particularly describe new Fig. 2.

The Examiner has objected to the disclosure because headings are missing, and indicates "Appropriate correction is required."

Applicant thanks the Examiner for providing information about recommended section headings. However, Applicant respectfully declines to add the headings. Section headings are not statutorily required for filing a non-provisional patent application under 35 USC 111(a), but per 37 CFR 1.51(d) are only guidelines that are suggested for applicant's use. (See Miscellaneous Changes in Patent Practice, Response to comments 17 and 18 (Official Gazette, August 13, 1996) [Docket No: 950620162-6014-02] RIN 0651-AA75 ("Section 1.77 is permissive rather than mandatory. ... [T]he Office will not require any application to comply with the format set forth in 1.77").

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, the claims have been amended for clarity.

The Examiner has rejected claims 1-10 under 35 U.S.C. 112, paragraph 1, as failing to comply with the written description requirement, in that subject matter which is not supported by the original disclosure has been added, to wit, "directly coupled" of claim 1 (and arguably claim 4) and "directly exchanging" of claim 8.

While, as noted by the Examiner, the specification repeatedly uses the term "coupled", Applicant would like to remind the Examiner that the original drawings are also included in the original disclosure. Hence, while the claims as originally filed use the term "coupled", the disclosure (i.e., the drawings as originally filed) also support the claim terminology "directly coupled" or "operatively connected" (note that original Fig. 1 shows a line connecting the estimators 6 and 7, in the two antenna receiving branches, to each other with no intervening elements). In order to appease the Examiner, Applicant has amended claims 1 and 4 to recite "operatively connected".

Applicant believes that the above changes answer the Examiner's 35 U.S.C. 112, paragraphs 1 and 2, rejections of the claims, and respectfully request withdrawal thereof.

The Examiner has rejected claims 1-9 (and apparently claim 10) under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,137,843 to Chennakeshu et al. The Examiner has further rejected claims 1 and 8 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 7,058,146 to Paulraj et al.

The Chennakeshu et al. patent discloses methods and apparatus for canceling adjacent channel signals of digital communications systems, which includes multiple antenna receiving branches, and each branch having estimating means.

As noted in MPEP §2131, it is well-founded that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Further, "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claim 1 includes the limitation "a first estimating means in one branch of the multiple antenna receiving branches is operatively connected to a second estimating means in a further branch of the multiple antenna receiving branches for using at least a part of the channel parameter estimate in the one branch as an aid for estimating at least a receiving channel parameter in the further branch".

The Examiner has indicated that Chennakeshu et al. teaches this limitation in Fig. 8, "811 is coupled to 812 through 821 and 801 as shown in Fig. 8", "for using at least a part of the channel parameter estimate in the one branch "(C_a through 821 and 801 is

input to 812 in Fig. 8) as an aid for estimating at least a receiving channel parameter (Fig. 8; D_a) in the other branch."

Applicant submits that the Examiner is mistaken. First, the output of Single Channel Estimator 811 is not "coupled" to the Single Channel Estimator 812 enabling the Estimator 812 to use "at least a part of the channel parameter estimate in the one branch". Rather, the channel parameter estimate from estimator 811 is applied to Reconstruction in Same Band device 821 for reconstructing an estimate of the channel signal. This estimated channel signal is then subtracted from the original channel signal forming a residual signal which is applied to the single channel estimator 812. Hence, the estimator 811 is not coupled (nor operatively connected) to the estimator 812.

Further, estimator 811 and estimator 812 are in the same received baseband signal branch (note r_a is applied to both the estimator 811 and the adder 801). At best, C_a and D_a are sub-branches of the same received baseband signal branch. The "further" branch would be the devices connected to receive the signal r_b and there is no coupling or connection between the estimators 813/814 in the r_b branch and the estimators 811/812 in the r_a branch.

The Paulraj et al. patent discloses a method and wireless communication systems using coordinated transmission and training for interference mitigation, in which multiple channel signals are received, transformed to the frequency domain by FFT 126, and the

transformed signals are applied to a MIMO space-frequency channel estimator 128.

The Examiner has indicated that Paulraj et al. discloses the claim limitation "a first estimating means in one branch of the multiple antenna receiving branches is operatively connected to a second estimating means in a further branch of the multiple antenna receiving branches for using at least a part of the channel parameter estimate in the one branch as an aid for estimating at least a receiving channel parameter in the further branch".

Applicant submits that the Examiner is mistaken. In particular, there is no first estimating means for providing a channel parameter estimate in the one branch, and a second estimating means for providing a receiving channel parameter in the further branch. At most, Paulraj et al. teaches a single channel estimator for all of the branches. Further, as indicated in Paulraj et al. at col. 13, lines 63-65, the channel estimator 128 generates a "joint channel estimate", as opposed to a channel parameter estimate in the one branch, and a receiving channel parameter in the further branch.

In view of the above, Applicant believes that the subject invention, as claimed, is neither anticipated nor rendered obvious by the prior art, and as such, is patentable thereover.

Applicant believes that this application, containing claims 1-10, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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